

**Worksheet: Part 6 Segment 1: Product Rule for Derivatives**

1. Find the derivative of  $f(x) = \sqrt{x}(x^2 - 3)$  using the product rule.
  
  
  
  
  
  
  
  
  
  
2. Find the derivative of  $f(x) = 4x(x^2 - 3)$  using the product rule.
  
  
  
  
  
  
  
  
  
  
3. Find the derivative of  $f(x) = (5 - 2x + 3x^3)(x^2 + 3)$  using the product rule.
  
  
  
  
  
  
  
  
  
  
4. Find the derivative of  $f(x) = (7x^6 + x^4 - 25)(5x^7 - x^6 - 7x^4 + x^2 + 3)$  using the product rule.
  
  
  
  
  
  
  
  
  
  
5. Find the equation of the tangent line to  $y = (7x^6 + x^4 - 25)(5x^7 - x^6 - 7x^4 + x^2 + 3)$  at  $x = -1$ .